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From the Massachusetts Agricultural Repository.

DR. T. W. HARRIS, OF MILTON, UPON THE NATURAL HISTORY OF THE SALT-MARSH CATERPILLAR.

In the present state of agriculture, hay has become an important product to the farmer in this vicinity. From the high price and the increased demand for the imported and cultivated grasses, the indigenous and natural growth of the soil must rise in value; and of this perhaps none is more valuable, on the seabord, than that of the salt-meadows.

But various causes have contributed to disappoint our hopes in the crop of salt-hay, and among those, the most apparently unavoidable are the ravages of insects. Of these, the caterpillars and grasshoppers have become the most formidable, by the great extent and the annual increase of their devastations. Meadows, where they have foraged, are entirely stripped of their covering; every green blade disappears before them;—what the caterpillars have left being devoured by the grasshoppers.

The object of this paper is to attempt to elucidate the natural history of the former of these insects, with the hope that it may lead to some sure method of exterminating them, or of limiting their ravages to a shorter period.

Caterpillars were observed, upon the salt-marshes, bordering Charles' river, near Cambridge, some ten or twelve years ago; since which time they have gradually multiplied and extended over the contiguous marshes. They were once by a high tide and strong wind driven upon Boston-neck, near to Roxbury line, where they laid in "winrows," apparently dead; but after the storm had abated they were resuscitated by the heat of the sun, and commenced their depredations anew, overrunning gardens in that vicinity and destroying every green leaf in their path. Thence, I presume, they migrated to the eastern side of the neck, and have followed the meadows as far as Quincy. To what distance they have spread on the north of Charles' river, I have yet to learn. They are also found on the marshes in Kingston; but probably originated from a different source from those in the environs of Boston.

The salt-marsh caterpillars are produced from eggs, laid by moths in the middle of June, which are hatched in the air, in seven or eight days afterwards. These eggs are nearly round, less than a grain of mustard, and about eight hundred in number from one female. The caterpillars are small and feeble at first, eating only the most tender part of the blade of grass; but rapidly increase in growth, and, in seven weeks or fifty days,* attain their full size, having repeatedly cast their skins. Individuals, at this period average one and three quarters of an inch in length. While growing they change the colour of their hair very remarkably;—being nearly of a mouse colour when small, and of a brownish hue when fully grown. Of these, at maturity, there are two shades; some being of a dun colour, and others much darker.

The body of all true caterpillars is divided into twelve segments besides the head.

Each segment, in this insect, is covered with twelve yellowish tubercles, arranged, rather irregularly, six upon each side: from these proceed the hairs, giving the predominant colour. The tubercles appear to be analogous in function to the bulbs of the hair in the human subject: they are, in truth, but common bulbs, from which tufts of hairs grow and are nourished, in the same way as each single hair grows and is nourished from its appropriate bulb. Between the third and fourth tubercle, on each side of the median* line, is a stigma or spiracle, of which there are eighteen, or two in every segment of the body, except the second, third, and last. The spiracles are the organs of respiration, and are the same, in number, in all the true caterpillars.

The colour of the body, divested of the hair, is yellow, shaded at the sides with black; and there is a blackish line extending along the top of the back. The spiracles are white and very distinct.

The hair proceeding from the three uppermost tubercles, on each side of a segment is almost black, as well as that from all the four first segments of the body. That from the tubercles at the sides is of a much lighter shade. On the two last segments of the body the hair is much longer than the rest.

This caterpillar, like most others, has eight eyes, four upon each side of the head. These are not to be distinguished without the aid of a microscope. They are situated just above those white feelers, so plainly seen attached to the upper lip. The eyes are here arranged in a semicircle, whose convex side is directed anteriorly.

The jaws are two, strong and corneous, and their operation, in eating, may be distinctly heard as well as seen.

It has sixteen feet;—six anterior and horny, and ten posterior and fleshy. These enable it to run with considerable celerity, as we may see, when the insect is at its full size; at which period it commences the wandering state, and leaves the meadows in search of a place of security for forming its cocoon.

These caterpillars are endued with a great degree of vitality; for long immersion in water does not destroy life. Being often exposed to that element, they seem provided with the power of enduring its approaches. They feed twice in the day; about ten o'clock in the morning, and four in the afternoon. If overtaken by the tide while feeding, they mount to the top of the grass; and then, if obliged to relinquish their hold, contracting themselves into a circular form, they commit themselves to the water. On this they float and are carried to the superior parts or borders of the marsh. There they are left, with the wash of the sea, in heaps, but alive, and in a short time ready to recommence their depredations upon the meadows. But when not engaged in feeding they conceal themselves at the roots of the grass, where they are equally secure from the effects of the water, even though covered by it. In this way also they pass the night. The hair, upon their bodies, appears to possess a repelling power, which secures the spiracles from the admission or access of the water; for, were this to be the case, the insect would be drowned. We should suppose that the tide, on receding, would sweep away many of these insects; but this is not the case: for in consequence of the irregularity of our shores, and of the power, which these caterpillars have of remaining, uninjured, on the surface of the water, for a long time, they generally gain some place of lodgment and safety.

Their most favourite food is the '*Onion grass*,' which is very succulent;* but they are not fastidious, and eat with avidity '*Fox*' and '*Bottom-grass*,' and even '*Thatch*' and '*Sedge*.' Of the '*Black-grass*'† they are not so fond, probably because it ripens sooner than the others, and is found nearer the upland, and thus, before it is reached, it becomes too dry to furnish the juices by which they are nourished.

By the first of August, generally, these insects have attained their greatest size. They now become very voracious, and continue eating all the day and night, without intermission. Soon they leave the meadows, aggregated in great numbers, and commence the wandering state, or 'begin to run,' as is the phrase, devouring every thing in their progress. Corn fields, gardens, and even the coarse and rank produce of roadsides afford them temporary nourishment, until they have found a place of security from tide and weather, and concealment from their enemies of the animal creation. A stone-wall, a wood-pile, fencing-stuff, and even hay-mows and stacks are the resorts of these caterpillars, where they intend to take up their winter quarters, and construct their cocoons. I have heard of their being dug up, in vast quantities, from the ground upon the edge of a salt-marsh; but, in this instance, it is probable that, being prevented by ditches in their attempts to escape from the marshes, they were prompted by instinct to take refuge deep in the bank.

The cocoons are formed of silk interwoven with the hairs of their bodies, and lined with a silky lamina of a dense texture. These cocoons retain the colours peculiar to the caterpillar; those being brown, which are fabricated by the dark larva, and the others much lighter coloured. If we examine the recent cocoon, we shall find the caterpillar within it entirely destitute of hair, and much contracted. In a few days it casts its slough, and becomes a chrysalis, of a dark brown colour, and about three quarters of an inch long. In this state it passes the win-

* They continue in the feeding state about as long as the apple-tree caterpillar, which is produced by the Phalæna Neustria of Linne.

* I have taken the liberty to employ this phrase, which is a technical one in Anatomy and Physiology, for that line which divides the animal into two equal and symmetrical halves, and I would indicate by it a dark line running upon the top of the back, the whole length of the body of this insect.

* It is so full of juice as to be with difficulty dried.

† *Triglochin maritimum, L.* sometimes called the sea arrow grass. This is considered by Mr. Lowell as the most valuable species.

ter, and, within the first and twentieth of June, the moth emerges from its chrysalis and cocoon, and flies towards the meadows; where, after the hymeneal rites are celebrated, and the eggs deposited, it dies.

The moth is the perfect state of the insect.—There are two varieties, as to colour, corresponding with the caterpillars from which they are produced. From the dark caterpillar and brown cocoon proceeds a moth with ash-coloured wings; and, from the lighter coloured larva and cocoon, is disclosed a moth whose upper wings are white, as are also the under wings in some individuals. These colours do not designate the difference of sex: for though the upper wings of the male are invariably white, those of the female are not as invariably ash-coloured; but this difference or variety of the female will be more distinctly described below. I would also mention that the male, and the light-coloured variety of the female, both proceed from caterpillars and cocoons of the same colour.

The male moth will be first described.

Head and throax white; eyes black; antennæ black, and doubly pectinated. Body orange-coloured, with six black spots on the top of each ring, and a white line between a double row of black spots on each side;* beneath the abdomen is a single series of four or five small spots: tail white. Upper wings white above, orange coloured beneath, spotted with black upon both surfaces: under wings both above and beneath orange-coloured, with a few large black spots. Thighs orange coloured; legs and feet white, spotted or banded with black.

Female—Head, thorax, tail, both surfaces of the upper and under wings, under part of the abdomen, and the thighs entirely ash-coloured. The wings are spotted with black. Upper part of the abdomen as in the male. Antennæ doubly (but slightly) serrated, not pectinated.

Variety of the female—Head, thorax, and tail, white. Upper part of the body as in the male. Upper and under wings white upon both surfaces, and spotted with black. This variety very much resembles the male, when the wings are closed, for then the under wings are not to be seen. It is however easily distinguished from the male by its antennæ which are serrated: and when we examine the under wings, and the inferior surfaces of the upper wings, and body, we find them to be destitute of the yellow or orange-colour, peculiar to those parts of the male.

I would only add to this description, that the moths, of both sexes, are furnished with a short tongue, separable into two filaments; and have also two scaly palpi, above the mouth.

This insect is closely allied to several others, very common in Europe, and some of which are also found here; such as Bombyx erminea,† &c. These form one family, and are arranged under the genus Arctia of Latreille, and Leach. This genus contains those moths, which have two scaly feelers; pectinated or ciliated antennæ; a short membranaceous tongue, composed of two separate filaments; and trigonate, deflexed wings; the caterpillar having sixteen feet.

Professor Peck, to whom this moth was shewn, considered it as a nondescript; and proposed to call it *pseud-erminea*, bastard ermine, from its affinity to the above mentioned Bombyx erminea.* I would therefore define the subject of this memoir.

Arctia (pseud-erminea) alis masculis anticis albis; posticis fulvis, utrisque nigro punctatis: tergo fulvo, sex maculis nigris supra notato; ventro quinquefarie nigro punctato. Fœmina variat alarum colore.

Larvæ gregatæ; verrucis luteis piliferis.

Pupa folliculata.

Interdum maculam septimam super postrema corporis parte videmus. Fœmina alis (anticis posticisque concoloribus) albis vel cinereis, nigro punctatis.

There are two facts, in the history of these caterpillars, that should be ascertained. First—the place where the eggs are deposited; this I have not as yet been able to discover; those eggs, which I obtained, were laid under glass vessels upon paper. Probably they would be found around the culm of the grass, or regularly arranged upon the leaf. Secondly—whether, by bringing home, with the hay to our barns, the caterpillars when fully grown, we are not liable to introduce them eventually into our uplands, where they might become as it were naturalized; and thereby increase the evils we already suffer from their devastations. This we have some reason to fear; since we know that the caterpillar at one period, (and that sometimes for several days,) feeds indifferently upon all green herbage. Some observations, made upon doubtful specimens of the larva and perfect insect, found occasionally on the uplands, favour this opinion. The peculiarities in the appearances of these specimens may possibly have arisen from a want of the food most natural to the caterpillar. Still both these points are as yet merely matters of conjecture; further examination must establish or refute them.

From observation and experience I would recommend the following plan, by which we may lessen the evils that we suffer from this enemy.

First, to cut the grass early in July; and secondly, to burn over the marshes in March. In defence of early mowing, it may be said,—that it is the only way by which we may save the crop from those meadows where the caterpillars have multiplied to any extent. The preceding history furnishes the data, from which to calculate the best time for affecting this purpose.

We have seen that the caterpillar is hatched about the twentieth of June, and that its ravages are continued seven weeks. If then the meadows, in one vicinity, are mowed about the fourth of July, the caterpillars, being small and feeble, will be deprived of their means of nourishment, and being unable to wander far, will die, before the crop is gathered into the barns. By the process of making the hay, most of the succulent juices are evaporated, and the grass becomes so dry and hard as to resist the efforts of these little devourers. Thus we see that the Black-grass, by ripening early, is rejected by them, and the crop is saved.

By the practice of late mowing, where the caterpillars prevail, the crop is diminished, immense numbers of caterpillars and grasshoppers are left to be dispersed upon the uplands, to multiply and increase the existing evil; or are brought in to perish in our barns and stacks, where they communicate a most unpleasant flavour to the hay, rendering it unpalatable to our stock, and occasioning a waste of fodder.

Many beneficial effects result from burning over the marshes in March. This has been long practised in the British province of New-Brunswick, and is getting into use in this vicinity, to the manifest improvement of the crops. By it the stubble or "old fog" is consumed, which becomes more necessary from early mowing, in the preceding year. By this means also we may destroy innumerable eggs and larvæ of grasshoppers concealed in the grass* the past autumn, and which, if matured, would produce a host more formidable than that of the caterpillars themselves. The roots of the grass are not injured by burning the stubble; they are fertilized by the ashes, and in a short time afterwards we shall be gratified by seeing the grass springing from the blackened surface with increased strength and fresher verdure.

The preceding observations on the history of these insects, are the result of the inquiries, investigations, and experience of the writer for several years; and the practice here recommended is one that was first suggested by necessity, and whose good effects have been reaped by many.

This little memoir is offered to members of the Massachusetts Agricultural Society, with the humble hope that they may derive some profit from what has been a pastime to the author.

Milton, 1822. T. W. H.

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* The upper consisting of six, in number and size corresponding with those on the back, and the lower of 4 or 5 spots, which are smaller than the former.

† Arctia lubricipeda. Leach. Arctia Menthastri?

* Bombyx (Menthastri) alis deflexis albis nigro subpunctatis; abdominis dorso fulvo, nigro punnctato; feribus anticis luteis.

Abdomen album, quinquefarie nigro punctulatum; dorsoque fulvo. Antennæ subtus nigraæ.

Fabr. Entomolog. Systematica.

* De Geer.

From the Mass. Agricultural Repository.

PASTEL, OR WOAD, AND ITS CULTURE.

We insert with great pleasure, the following communications on the culture of Woad, (Isatis Tinctoria,) and General Dearborn will permit us to express our sense of the obligation which the public are under to him, for his continued efforts to introduce the cultivation of this plant, now so important to our manufactures. During the late war, General Dearborn made some interesting experiments on a small scale, to prove the *practicability* of raising this important dye-stuff in the United States. Though his experiments were not extensive, they were entirely satisfactory. He did more. He compiled and wrote, and published at his own expense, a treatise on the culture of this plant, which contains all the information necessary for a cultivator of it. The peace came; with it, low prices; and the subject lost a portion of its interest. But great changes have been wrought during the last seven years, and the culture of woad has again become a subject of deep interest. The fact, that an extensive manufacturer, like Mr. Crowninshield, has found it for his interest to cultivate this plant, and has proved its value practically, seems to set the question at rest. We invite our cultivators generally, to read with attention these communications, to procure Mr. Dearborn's work on Woad, and to make some moderate experiments upon this article.

Mr. Dearborn's letter to Mr. Lowell, April 3, 1823.

Dear Sir—I inclose a letter from Richard Crowninshield, Esq. on the cultivation of woad, which, if you think proper, please to cause to

be inserted in the Agricultural Journal. It is the largest experiment that has been made in this section of the country. It shews that our manufacturers can raise this valuable article for the dyeing vat, at little expense, and with great ease.

With great respect, your most humble servant,

H. A. S. DEARBORN.

Extract of a letter from Richard Crowninshield, Esq. of Danvers, to Brigadier Gen. Dearborn, dated March 29, 1823.

"I planted about 5 acres with 9 bushels of woad seed, in 1822, some of which seed you was so obliging as to present to me. The remainder was procured from Connecticut, New-York, and some were of my own raising in 1821, from seeds received from Dr. Nichols, in 1818. There was no difference in the plants raised from these several parcels of seeds. The soil was light, dry and sandy. The land was broken up in the spring of the same year. The sods were removed, and the land crop ploughed, harrowed, and furrowed out 2½ feet between the furrows. About 40 cords of good compost manure, (consisting of horse dung, cow dung, and pig manure, mixed with about one fourth part of its bulk of bog turf, which had been in heaps about two years, with some ashes, lime, &c.) were spread on the land and ploughed in as for Indian corn; the furrows were slightly earthed. The quantity of seed two bushels to the acre. They were sown rather thickly in the furrows, in order that in gathering them, there might be a full handful of plants to crop at the same time. The seed was lightly covered. It was all sown before the 20th of May. It grew well, but required five or six men to keep down the weeds in July. It was all picked or twisted off quite to the ground. It was then again cleared of weeds, and in 14 days the new leaves were from 9 to 14 inches long in rich spots. The second crop was gathered from the 15th to the 20th of August, and produced about four tons of green leaves, about one ton less than the first crop. The dry weather prevented a third crop from being taken. *Some leaves* were however taken in October, 5 inches long, but I preferred to let them generally remain to protect the plant against the frost, *having the last winter lost* an acre of woad, and an acre of teazels, by frost. The loss in woad was much less than in the teazels; the plants which I lost of the latter would have sufficed for four acres, and have produced much money, being worth from 50 to 75 cents for every hundred plants. All the woad plants are now alive, (that is, on the 29th March, 1823,) and have grown half an inch. I have also many thousands of teazel plants in good order.

"The expense of cultivating woad is about equal to that of cultivating onions, and ten men will crop an acre in a day.

"There is something remarkable in the woad plant. Some roots which produced seeds last year, sprouted again from every joint like cabbage sprouts. They are now again sprouting from under the snow, the leaves are green, and may again be cropped this spring. *I shall have a great quantity of seed* to dispose of at $1,50 per bushel. I paid two dollars. There are but few men in America who understand, *perfectly*, the preparation of woad for the dyer. Our farmers, should it become the policy of the nation to raise and manufacture our own woollen goods, equal to the national consumption, will probably find it for their interest to raise woad, and deliver it green or dry (as may be most convenient for them) at regularly established mills, exclusively devoted, as in England, to this article. Inclosed you have an article from the N. York Statesman on woad."

The article referred to from New York, is interesting, and is, therefore, here inserted.

N. B. General Dearborn has still a few copies of his work at the command of persons disposed to cultivate the woad.

AMERICAN MANUFACTURES.

Extract of a letter from Cincinnati, Ohio, to the editors of the Statesman.

"Having seen several communications in your valuable paper, respecting the *art of dyeing*, and the cultivation of the *woad plant*, by which it seems that manufacturers in your part of the country are doubtful whether woad can be produced in the United States in the same perfection as in England, I have thought proper to state, for their information, that in 1821 I planted two acres, and found the produce to be at least one fourth more in quantity, having cut *seven crops* during the season. In England, I never knew more than *five*. Its strength, as a mordant, exceeded the English at least one third, containing three times the coloring matter I have ever found in any woad, after an experience of forty years, in an extensive trade in England.

I herewith forward to you some patterns of wool, dyed with this woad, and regret I had not preserved some colored with woad only, by which artists acquainted with the subject would know its superior qualities. I have always observed in England, that our woad plant produces more in quantity and better in quality, in a warm season; and I attribute its great perfection here to the same cause.

Your manufacturers of woollens cannot fully succeed until they become well acquainted with this useful plant, as no good blue, black, green, or purple color can be produced without it.—All other modes are imperfect, expensive, and mischievous. Having made this country my home, I shall take pleasure in communicating this knowledge, to any one that may need it, for a moderate compensation. *Written directions* may be given for growing and preparing woad, without any chance of error; *but to use it* properly, requires considerable attention and good instructions.

I suppose it may be produced for three or four cents per pound—perhaps for something less. I have sold some of mine at Baltimore, this season, for 12½ cents, by which you will perceive there is great profit in its cultivation. In my opinion no substitute for woad will be found worthy of attention, although it seems your friend *Hopson* thinks he has discovered one, which will answer the purposes both of woad and indigo. Your correspondent will confer a favor on me, by giving a description of the wild indigo plant, as he terms it. I will investigate its properties, and communicate the result to him.

Your correspondent who has written on the *scarlet dye*, appears to be acquainted with only a part of the theory of that art, as two essential ingredients are not mentioned, one of which I have seen since my arrival in this country.—Your friend is also in an error in supposing he can render color more brilliant by using steam. I have made use of steam in dyeing for nearly thirty years, and am well acquainted with its advantages and disadvantages. It is a cheap and expeditious mode; but it cannot be used for fine colors, such as Saxon blue, green, pink, crimson, scarlet, orange, yellow, and all other delicate colors, *but at the expense of its beauty.*

All dyers should know, that when bright colors are wanted, the first step to be taken is to clear the water of all mineral and animal substances. This is all that is necessary to prepare the liquor for any bright color; but if raw water be added, or steam suffered to flow into the vessel, the beauty of the color will be destroyed, in proportion to the quantity admitted."

The letter, from which the foregoing is an extract, adds a number of other particulars connected with the subject of manufactures. It states, among other things, that large quantities of Fuller's Earth are said to be found on the banks of the Wabash; but after diligent search, none, in a pure state, has yet been discovered in the vicinity of Cincinnati. Our correspondent has put to us the following questions, to which we hope some one will furnish satisfactory answers, as we are unable to do it ourselves:

1. What quantity of woad would be consumed annually, in the vicinity of New York and Philadelphia, estimating one pound of woad to five pounds of wool, dyed of a dark blue?

2. Would the manufacturers give a reasonable compensation to be instructed in the art of dyeing generally?

3. Whether it would answer any good purpose, for a person who understands the manufacture of woad and its various applications in the art of dyeing, to establish himself in this part of the country?

It is proper to remark, that we are wholly unacquainted with the writer of this letter; nor have we a sufficient knowledge of some of the topics embraced in his communication, to judge of the accuracy of his remarks. *Hopson* will be able to speak for himself, where his correctness is questioned.

The beautiful specimens of coloring, accompanying the letter, may be seen at this office, where the name and address of the gentleman who forwarded them may be obtained.

To the Editor of the American Farmer.

Fort Osage, (Missouri,) April 8, 1823.

"I am, at this moment, experimenting in my nursery. I have grafted apples on sycamore and cotton tree stalks, close to the roots. I am told that the most flourishing and surest orchards of apples in the west, are growing on sycamore roots. I am trying peaches on the wild plum, and shall, by recommendation of one of my neighbors, graft some peaches on stocks of the common black walnut. This neighbor of mine assures me, that he has seen a very *old* and flourishing peach tree growing on a walnut—it is easy to try it; and should it succeed, perhaps we may be able to obtain durable peach trees—at least, we shall escape the annoyance of the worm. I am determined to try all manner of ways to procure a good permanent peach orchard. The result of such of my experiments as prove successful, shall be made known to you in due time."

From the Baltimore Morning Chronicle.

TO THE PUBLIC.

As the season of the year is approaching, when persons owning horses become alarmed, in consequence of these animals passing off bots with their feces, I have thought proper to endeavor to remove such fears, by laying before the public some facts which I have noticed in the course of twenty-four years experience.

Bots are generally found adhering to that portion of the horse's stomach, which is lined with a continuation of the œsophagus membrane, to about one third or little more of its extent; sometimes they are found attached in great numbers to the pylorus, *or the posterior opening of the stomach.* The time that horses begin to pass them off, is generally in June, and so on through September to October. The bot remains in a chrysalis state for an uncertain, but short time, and then assumes the same character as the parent fly. To prove, without the possibility of doubt, that the bot is produced from the fly which deposites its ova on the hair of the horse, I took twelve bots that came from twelve horses; these I put into separate vials, and with paper wrapped round a quill barrel, I made stoppers to give ventilation, and noted on each vial the day that each bot came from the horse; this was convincing as to the uncertain time of the chrysalis; for some produced the fly in twenty-one days, others in forty-nine days, and others in the intermediate time. The flies thus produced were the same as those that deposite their eggs so plentifully on different parts of the horse. What it may be that causes this difference of time in the chrysalis admits of speculation. It is proper to notice, that a bot taken from the stomach of a dead horse, cannot produce the fly, as in this stage of its progress through the canal, it is not sufficiently matured.

There is no worm that we know of, in the intestines of the human subject, which makes such an annual rotation; and in consequence of their long continuance in the intestines, we find numbers of the human family destroyed by them. Whereas, it may be presumed there would be few or none killed by worms were their rotation annual. And as bots perform this annual course, it can be no cause of surprise that they are not so destructive as they are commonly supposed to be. Was it a fact that they were thus destructive, we should find very few colts raised to the age of four years, for colts generally run out until they are considered ready for work, and are fully exposed thro' the summer to the action of the fly.

If a horse, by symptoms, expresses much pain, it is said to be the bots; and so much does this opinion prevail, that people imagine bots kill more horses than any other disease. If we reverse this opinion, we shall perhaps come nearer to the fact, for in all probability there is no disease that destroys so few. When he is said to be sick with bots, it is generally *spasm* or *inflammation* of the intestines. That bots never kill I will not assert, though there are eminent veterinarians in England who say they never do.

It is a common opinion, that a few bots are essential to the health of the horse. This erroneous idea arises from people opening but few after death, and those few being found to have bots in them. But in the many hundreds that I have opened, their have been some in which not a bot was seen; and not one of these may be supposed to have died for the want of bots. The motive I have in making this communication is to remove the fears that prevail with some persons, when they see bots coming from the horse, as if they were so numerous as to kill him immediately. But for the information of such persons as would rather give something to facilitate their discharge, when they see a few coming away, I would advise one ounce of powdered savin, to be given in the horse's feed, once a day for three days. At the season above mentioned, I have recommended this medicine to such persons as I could not persuade to be satisfied with the course of nature; and they were very much astonished at the quantity of bots, brought off by it.

JOHN HASLAM, Veterinary Surgeon.

Baltimore, April 13th, 1823.

From the American Farmer.

Pittsfield, 6th June, 1823.

DEAR SIR—I have noticed an article in your No. 5, vol. 5, of "*a New Jersey Subscriber*," on the subject of Ruta Baga, in which he expresses his doubts, if it be a profitable crop, and gives his reasons.

Equally desirous with your correspondent of eliciting practical knowledge, I am induced to state, that five years experience, satisfies me that it may be raised to advantage, *wherever the climate is adapted to its culture*:—because,

1st. To raise a good crop it is necessary to put the land in a good state of tilth.

2d. The requisite care of the crop, while it extirpates weeds, prepares the soil in the best possible manner, for stocking to grass with the succeeding crop of grain.

3d. All kinds of live stock are fond of it.

And 4th. It affords a most succulent food, at a time (the spring,) when most wanted for every kind of stock.

Having remarked the advantages arising from the turnip culture in Europe, I was induced soon after entering on Agricultural pursuits, to give it a fair experiment, notwithstanding the general opinion in this section of the country, that turnips *could not be raised*, except on *newly cleared and burnt land*; consequently, they were only cultivated in a partial manner, and merely for culinary purposes.

In 1817, I selected for the purpose an acre in a field, that might be termed *worn out land*; that is to say it would produce a half ton of hay to the acre. The soil, a dry gravelly loam—gave it three ploughings and two harrowings before drilling—on the 24th June, manured with twenty-six loads of barn yard and hog's manure, and sowed the common English turnip—gave it a top dressing of about fifteen bushels slacked lime, and fifteen bushels leached ashes. It produced eight hundred and sixty-three bushels, and received the premium of the Massachusetts Agricultural Society. Very many of the turnips weighed from ten to twelve pounds; generally from six to eight pounds.

Having raised at the same time a small quantity of Ruta Baga, from seed procured direct from Russia, I was enabled to make a comparison of the relative value of the two kinds, and hence am satisfied, that with us at least (on account of our long winters and late springs) the Ruta Baga is preferable to the common turnip, because the latter can only be used to advantage for fall feed, whereas the former will keep good through spring—and at this time I have them in perfection. It is true, an acre will not produce so many bushels of the Ruta Baga, as of the common kind of turnip, but that, I consider, as fully compensated, by the greater quantity of nutritive matter they contain.

Since 1818, I have raised the Ruta Baga every year, and may safely state, that, in no year has the crop been less than five hundred bushels per acre, and entirely free from worms.

Nothwithstanding this favorable result, it is with much regret, I am obliged to add, that I am, as yet, almost alone in this county, in the cultivation of turnips as food for live stock, although our soil and climate are peculiarly adapted to them. AGRICOLA.

☞ The climate of New England is so much moister than that of the southern states, that we apprehend both potatoes and turnips may well succeed there, in seasons when they would fail even with us in Maryland. The suggestions above, are valuable and conclusive—however, as to New England, at least—and yet we see that even there, this great resource for winter feeding of stock is neglected. What immense advantages have resulted from the turnip culture to England. We regret that the communication from Agricola was not sooner received, but any thing from his pen will be at all times highly acceptable.—*Ed. Amer. Farmer.*

From the American Farmer.

WOOL.

In compliance with the request of one of your correspondents, I state, that I have just finished shearing a flock of 525 of mixed merino sheep, from which I have obtained, 2368 1-2 pounds of wool, free from tags, giving an average of a little more than 4 1-2 pounds. My average is not as great as it has been in former years, in consequence, (I presume,) of my flock's containing at this time, a larger proportion of breeding ewes than usual. I have always been in the habit of preparing my wool for market, by laying each fleece, as it is taken from the sheep, on a table, taking off all around, about two or three inches of the coarsest wool, which is reserved for domestic purposes, and rolling the remainder up very nicely and firmly, with the inside of the fleece turned out. The whole is then packed away in coarse bags; and a waggon, will at a single load take a thousand dollars worth of it to market. My wool, thus prepared, has been readily sold, for the last four years, at 40 cents per pound, in Alexandria; and I am very much inclined to think would bring a great deal more in the northern markets. But from some cause or other, we find it very difficult to ascertain the market price of wool in other places. I last year, made an inquiry through your paper, on this subject which was never answered. The growers of wool would certainly find it to their interest, to communicate freely with each other on this subject. And wool is now becoming too important an article, not to be entitled to some little attention, in a paper, devoted like yours, to the agricultural interest of the nation.

I have been told that during the last summer 70,000 lbs. of wool were imported from Europe into Boston alone, and sold, at public auction, at from 75 to 125 cts. per lb. Is this the fact? And if so, what was its quality and condition?

Will not some northern wool grower reply to these inquiries; and tell us also the usual price of American wool in the northern markets? In Ohio I have been told it readily commands from 50 to 100 cents.

I am no friend to any unnecessary commercial restrictions; but if Congress have thought proper to give encouragement to our manufactures, is there any consideration either of justice or state policy, which should withhold a similar encouragement from the raw material, of which the manufacture is made? F.

☞The Editor expects, with confidence, that the above article will attract the notice, and be favored with an answer from several of his patrons in Connecticut and Massachusetts. How can gentlemen expect answers when they want information on some points, unless they communicate it when it is asked on other subjects, within their knowledge and experience?

Ed. Amer. Farmer.

NEW ENGLAND FARMER.

SATURDAY, JULY 5, 1823.

Farmer's and Gardener's Remembrancer.

JULY.

Horse Rake.—In our observations, (p. 373) on the subject of hay-making, we forgot to mention a machine for raking ray, which seems very well adapted to the purpose of saving manual labor. The following remarks and description of the machine we allude to were first published in the Pittsfield (Mass.) Sun, and republished in the second volume of "Memoirs of the Board of Agriculture of the State of New York."

"The present period of low prices of products, and the necessity of economy, renders it expedient to inquire whether the labor of conducting our farms may not be abridged by the introduction of what are called labor saving machines. My attention has been called to the consideration of the subject. In one instance, viz. that of gathering hay after it is made, I am confident the labor and expense may be greatly abridged. In one or two sections of our country, the *Horse Rake* has been introduced and used most successfully. To satisfy myself fully on the subject, the last season and the present, I have had one in operation. It has exceeded my expectations, and I now recommend it to the immediate use of all our farmers. It will enable one man, with a steady horse and boy, to perform at least as much work in gathering hay into winrow and pile as *six good men* can accomplish, and as clean as is commonly done in raking by hand. The experiment which I have made will warrant this statement. The expense of the *Horse Rake* is small, not exceeding two dollars. It is constructed thus: Take a stick of timber, of say any stout wood. Ash, chesnut, fir, or spruce will be sufficient—ten feet long if your mowing lands are free of obstructions, and if obstructed with stumps or rocks, then shorten the head of the rake to your convenience. The rake head may be three and a half inches by two and a half diameter, or as you please. The teeth should be twenty-two inches long, and one inch by one inch and a half diameter, and set firmly into the head about two inches and a half apart. These teeth may be made of firm white ash, or walnut, or oak. The teeth should be made at the end to turn up, so as to run on the ground like a small sled, and not into the earth. On the top of the head should be fixed about seven small standards, eighteen inches long, to prevent the hay falling over the head. In the centre of the head fix two handles, such as you have on ploughs, at a suitable distance, to guide and steady the rake. From the ends of the rake, extend a rope, of the size of a cart rope, to fasten the horse's collar. The distance of the horse from the rake may be such as to leave room for the hay to gather. Observation will soon direct the length of the ropes. Care must be used to have the teeth set even and firm, that they may run near the earth. This rake is used to collect the hay into winrow, or pile it—and it is useful in all grain fields to glean the scattered grain, and to lay down the stubble close to the earth to rot and promote putrefaction.

"P. S. A Horse Rake is in use on the farm of Thomas Gold, Esq. at Pittsfield."

The Farmers' Assistant likewise gives an account of this implement, corresponding with the above, and adds that "the teeth, when in operation, run along the ground nearly horizontally, with the points a little the lowest, so as to run under the hay, and as they take it up the upright slats retain it till the rake is full, when the man who follows it behind turns it over, and thus empties it in a row; then lifts it over the hay, thus emptied, and sets in beyond it; and so it proceeds on, till it is again filled, and the same process again repeated.

"When one strip across the piece is thus raked up, the horse is turned round, and another strip is raked in the same manner, emptying the hay at the ends of the last heaps raked up, so that in this way winrows are formed. When it is thus raked into winrows, it is dragged up by the rake into bundles large enough for making cocks."

Hoeing Corn, Garden Vegetables, &c.—Some farmers hoe their corn twice, others three times, but it is believed that it is rarely hoed too often. We have heard a person observe that he hoed a small patch of corn in his garden every morning, Sundays excepted, from the time that it was an inch or two in height, till the top stalks or tassels made their appearance, or as the phrase is, the corn had "*tostled out.*" The consequence was that the corn came forward with uncommon rapidity, and he had ears fit to roast more than a fortnight earlier than his neighbors, whose corn with equal advantages in other respects, was hoed but three times. Some people hoe their land very *superficially*, but they are but *shallow* cultivators. Dr. Deane observed that "the deeper land is hoed, the greater advantage do plants receive from hoeing, if due care be taken that their roots be not disturbed, or too much cut to pieces." Mr. Cobbett (under the head *cultivation*, American Gardener, par. 178, &c.) says, "If the subject be from *seed*, the first thing is to see that the plants stand at a proper distance from each other; because if left too close they cannot come to good. Let them also be thinned early; for, even while in seed-leaf, they injure each other. Carrots, parsnips, lettuces, every thing, ought to be thinned in the seed-leaf.

"Weeds never ought to be suffered to get to any size either in field or garden. In England where it rains or drips sometimes for months together, it is impossible to prevent weeds from growing. But in this fine climate, under this blessed sun, who never absents himself more than about forty-eight hours at a time, and who will scorch a dandelion root or a dock root to *death* in a day, and lengthen a water-melon shoot twenty-four inches in as many hours: in this climate, scandalous indeed it is to see the garden or the field infested with weeds.

"But, besides the act of killing weeds, *cultivation* means *moving the earth* between the plants while growing. This assists them in their growth; it feeds them; it raises food for their roots to live upon. A mere *flat*-hoeing does nothing but keep down the weeds. The hoeing when the plants are become stout should be deep; and, in general, with a hoe that has *spanes*, instead of a mere flat plate. In short, a sort of prong in the *posture* of a hoe.* And the spanes of this prong-hoe may be longer or shorter, according to the nature of the crop. *Deep* hoeing is enough in some cases; but in others *digging* is necessary to produce a fine and full crop. If any body will have a piece of cabbages, and will dig between the rows of one half of them twice during their growth, and let the other half of the piece have nothing but a flat hoeing, that person will find that the half which has been digged between, will, when the crop is ripe, weigh nearly, if not quite, twice as much as the other half. But why need this be said in an Indian corn country, where it is so well known, that, without being *ploughed* between, the corn will produce next to nothing?

"It may appear, that, to dig thus amongst growing plants is to cut off or tear off their roots, of which the ground is full. This is really the case, and this does great good, for the roots thus cut asunder, shoot again from the plant side, find new food, and send instantly, fresh vigor to the plant. The effect of this tillage is quite surprising. We are hardly aware of its power in producing vegetation; and we are still less aware of the distance to which the roots of plants extend in every direction."

We believe, however, that after plants have arrived at nearly their full size, it injures them to cut off their fibrous roots. While the plant is young and thrifty it may have the power to re-produce its roots if they are cut off, but not so when it has come near to maturity. Dr. Deane says "hoeing should cease, or be only superficial, when the roots are so far extended as to be much injured by hoeing. They will bear a little cutting without injury. For when a root is cut off several new branches will come in its place." Our farmers in general, and we believe correctly, decline to use the plough or horse hoe, among corn, after it has *set for ears*, as the phrase is, or in other words, the ears have began to form; because, they say it injures the roots and prevents the ears from filling so well as they would do otherwise. But if weeds abound among the corn at the later periods of its growth, they should be pulled up by hand, destroyed by shallow hoeing, or it would be better than leaving them untouched, to clip them off with a scythe or sickle, that they may at least be prevented from running to seed.

* Hoes of a similar kind may be obtained at the Agricultural Establishment, No. 20, Merchants' Row, Boston.

One of the purposes to be effected by hoeing is to nourish the plants by drawing fresh soil near to them, and by the same means to cause them to stand more firmly. But this should be done with caution. Hilling excessively is hurtful, as it does not permit the roots to have so much benefit from the rains, and too much hinders the influence of the sun upon the lowermost roots. If, however, the ground be dry, and the season warm, it may be well to make the hills somewhat larger and higher than would otherwise be expedient.

It seems to be a point not yet fully settled whether it is best to cut off, or otherwise destroy the *suckers* of Indian corn. The Farmers' Assistant tells us that "the growth of suckers is injurious to the crop, and ought to be either pulled up, or bent down to the ground with earth sufficient to kill them; and this is believed to be the better way, as by this mean the principal stalk is not injured by wounding."—We believe in cultivating the premium crops in Massachusetts, the suckers were generally taken away. In the Hon. Mr. Hunnewell's account of his raising a crop of one hundred and eleven bushels of corn to an acre, (Mass. Agricultural Journal, vol. vi, p. 242) it is stated that "immediately after half hilling, the suckers were all carefully cut off." Col. Valentine's statement of having raised 116 bushels and 28 quarts of corn to an acre, (see page 178 of our paper,) mentions that "all the suckers were pulled out in July; and in August all the suckers were again taken away, together with the false stalks, and those that were smutty." Mr. Lemuel Davis, however, by an experiment, which is related in our first No. page 8, arrived at a different result. The gentleman last mentioned states that when he cut off the suckers from the stalks, he found "such a proportion of the juice wept out where the sucker was taken off that the growth was not so large, and the ear set higher upon the stalk; on the part where the suckers were not taken off, the corn was thicker set and more prominent—the ears set ten or twelve inches nigher the ground, and were a good proportion larger." On the whole, we think that further experiments to ascertain the effects produced by removing the suckers are much to be desired; and we hope that farmers in general will pay so much attention to this subject as to take off or bury the suckers in at least one row of their field, and compare its product with the next in which the suckers are suffered to remain. The time and manner of performing this operation should also be carefully noted, and the whole made public for the benefit of the community.

The last number of the *Massachusetts Agricultural Journal* contains as much useful and interesting matter as any preceding No. of that valuable work. We propose, from time to time, to replenish our columns from that source, at the risque of incurring the displeasure of certain fault-finders, who object to every article which is not altogether original, or written expressly for the publication in which is made its primitive appearance. Although many of our readers have seen the articles which we have extracted, or may extract, from the work adverted to, yet many more residing in distant quarters of the Union, may receive them thro' the medium of the New England Farmer, to whom otherwise they would be like a fountain sealed, or a light, which though brilliant, is without the limits of their horizon. It would be folly for us to deprive ourselves or our readers of the benefits resulting from a wholesome, invigorating, and fertilizing stream, merely because its fountain head is not situated on our premises. Besides, we are so well acquainted with the characters, views and motives of the gentlemen who conduct the Massachusetts Agricultural Repository, that we are confident they will not be displeased if we avail ourselves of the fruits of their labors, since we cannot in any other way so effectually promote the objects of their institution.

NEW AGRICULTURAL PUBLICATION.

By the politeness of Jesse Buel, Esq. of Albany, we have received a copy of the second volume of "*Memoirs of the Board of Agriculture of the State of N. York. Published by authority.*" This work consists of more than 500 pages, octavo. It contains, we believe, quite as much valuable information, relating to the subjects which it professes to embrace, as any work of the kind ever issued from the American press. Indeed, nothing less could have been expected from the joint efforts of many of the most enlightened, liberal and philanthropic individuals in that large, populous and enterprising state, whose improvements in canals, steam-machinery, &c. &c. have realized what, half a century since, would have been thought to have been the dreams of a sanguine and visionary speculator.

In speaking of this work we shall not presume to take the chair of a critic, and shall in no other way express our high estimation of its contents than by giving, from time to time, such extracts as may in our opinion prove most beneficial to our readers. The following, from the preface, is all we have room for in the present number.

"The original articles in this volume give it a strong claim to public attention. But a few years have passed, since the business of cultivating the land, was generally considered here as a coarse occupation, giving a precarious living to the most laborious and the most numerous portion of the community. We now find active and intelligent men spread through the state, pursuing with spirit the improvements in agriculture, which a long experience has taught other countries, and devising practical and rational methods of accommodating them to our own climate and soils.

"To what is this important revolution owing? How is it that the farming interest has been so astonishingly redeemed from the unjust humiliation into which it had sunk?

"The answer is, that public patronage has elevated the condition of the yeomanry in their own estimation: it has given them confidence in their own resources, and in thus laying the best foundation for individual and national contentment, has already produced its own reward. For certainly this great moral consequence far exceeds in importance, the comparatively insignificant means which have been applied to produce it."

[COMMUNICATED.]

We extract the following notice respecting Sheep, from the Montrose Gazette, published in Susquehanna County, (Penn.)—a county settled principally by farmers from the New England States, and which they have changed in twelve or fifteen years from a wilderness to a well-peopled farming district. The county has been described as high land, well watered, healthy, and particularly well adapted to grazing.

"My neighbor, Mr. Crandall, in the fall of 1818, had six ewes. In the spring of 1822 his little flock had increased to *thirty-two*, although in November 1819 he had killed two; in November 1820 he sold two and killed seven. In the summer of 1821 he sold seven, and in November following he sold seven and killed three. In November, 1820, he bought one ram, which with one of his ewes, died the following spring. He bought another ram in November 1821. Recapitulation—originally six; sold sixteen; killed twelve; bought two; lost two; remaining, thirty-two. The increase from the six, FIFTY-FOUR.

"J. Adams bought twelve ewes in September 1821, from which he raised sixteen lambs the following spring. The same year he sold from his flock ten, and killed six. From the remaining twelve he has this spring raised fourteen lambs. One of last years lambs, at one month and one day old, weighed forty-four and an half pounds.

"Mr. Follet has three ewes, each of which on the same night this spring, brought him three lambs, all of which are now living and thrifty." A FARMER.

To the Editor of the New England Farmer,

Sir—I am told the *Canada Thistle* is travelling East, and has already reached Vermont, New Hampshire and a part of Massachusetts. Indeed, I perceive it has found its way on to my own small farm, to my no little dismay.—Will you, Sir, permit me to ask my brother farmers to communicate to the public, through the medium of your paper, all they know about this plant; and particularly to state the best and most successful method to exterminate it. By so doing, they will much oblige

MIDDLESEX.

WHOOPING COUGH.

A writer in the Fredericktown Herald gives the following as a remedy for this distressing complaint.

Dissolve 30 grains of salt of tartar in a pint of clear water, add to it 40 grains of cochineal, and sweeten it with loaf sugar. Give a child one year old, one tea spoonful four times a day, with a table spoonful of barley water immediately after. Boiled apples put into warm milk, may be the chief food, if they can be had. This will relieve the patient in two or three days, and cure in a week.

In the last stage of this complaint, take the tincture of bark 1½ oz. paregoric ½ oz. tincture of cantharides 1 drachm, mix them, and give to a child one year old 15 drops 3 times a day, and so on in proportion to the age of the patient.

FOREIGN.

Nothing new or interesting from the theatre of the French and Spanish war has transpired since our last. There has been a late arrival at N. York, Capt. Doane, from Cadiz; but he brought intelligence from that city of no later date than the 15th of May. Accounts from St. Andero have been received by Capt. Tunison, as observed in our last, to the 20th of May. We know nothing more of the alleged masterly manœuvres of Gen. Mina, in thrusting himself between the French army and the frontiers of France; and we may as well adjourn our curiosity from day to day, till authentic accounts of a later date shall be received. We might give our readers a column or two of *guess work*, or present them with a few samples of the buz! buz! of English and American journalists, who make use of many inventions to keep curiosity awake and expectation on tiptoe, as well as make news from "the whole cloth," for the purpose of appearing to know what cannot be known.

From South America accounts are confused and contradictory, every new report showing the fallacy of that which immediately preceded it. The last intelligence from that quarter was received in New York, by Caraccas papers, which came down to the 31st of May. They state that the Columbian squadron, consisting of 17 vessels, has entered the Laguna of Maracaybo, under the command of Padilla; and that troops from Rio de la Hache arrived on the 19th in the line of Garabella, and had there beaten 700 men belonging to Morales. Gen. Padilla has taken all the sea force of Morales in the Ragoon, and keeps him entirely surrounded, and has cut off all his resources. Morales cannot now escape, or rally any new force. He is worried out.

By an arrival at New York in 36 days from Pernambuco, information has been received that Lord Cochrane, with the Imperial Brazil fleet of 11 vessels, of which one is a line of battle ship, was blockading St. Salvador. Several thousand troops had recently arrived from Lisbon, to recover, if possible, and support the dominion of the mother country. St. Salvador is represented, however, as the only place in the possession or in the interest of the royalists; and the patriots hold out the country to within a few miles of its gates.

DOMESTIC.

Robberies.—On the 26th inst. the store of Mr. Flavel Foster, at the head of Long Wharf, was entered, and a desk broken open, from which the robbers took a small sum in change. They also carried off a quantity of goods of different kinds. A reward of $20 has been offered for apprehending the offenders.—On the same evening the printing office of Joseph W. Ingraham, in Franklin Avenue, was entered, and the counting room and desks broken open. About $40 was taken from one of the desks.—The next night, store No. 8, Long Wharf, was broken open, and goods to a considerable amount stolen therefrom.

Distressing Accident.—On the 18th ult. a quantity of gunpowder, in a waggon, was exploded in Dover, N. H. By this explosion two men were so badly burnt as to die within twenty-four hours. A third person was so much injured that it is feared, if his life is spared, his sight cannot be restored. The waggon had stopped in one of the most frequented parts of the village. Some powder from a cask had fallen on the ground near the waggon. To this some idle and mischievous boys set fire, in the absence of the owner. The fire communicated to the straw in the waggon. An alarm was given, and the inhabitants hastened to extinguish the blaze; but the owner, informing them that it contained 24 or 25 casks of gunpowder, checked their progress. The horses set out with the blazing waggon in the direction of the most frequented street, but the citizens turned them towards the river, which they nearly reached. Four or five persons, who had not been informed of the contents of the waggon, attempting to unharness the horses, the powder took fire, and injured three of them as above mentioned. One of the horses was so much hurt that he died soon after, and the other is rendered useless. The waggon was blown to atoms. The coat of the owner, which lay on the powder, was blown nearly across the river; and the saddle of one of the horses was blown into the air on fire, and lodged on the roof of an adjacent house. The persons burnt had sufficient presence of mind to plunge into the river. The explosion took place near a large brick store, which sustained the principal damage.

New Settlement.—Stephen Austin, a North American, has formed a settlement with three hundred families in Texas, and they have solicited the Mexican Congress to be naturalized as citizens of Mexico.

The Mississippi.—This river had fallen on the 8th ult. at New Orleans, about seven inches, but was still rising at the mouth of the Ohio, and the Upper Country was so inundated as to cause great destruction of the crops. For the distance of six or seven hundred miles up, nothing was to be seen but the tops of trees.

New Poem.—Solomon Southwick, Esq. Editor of the Albany Plough Boy, is about to publish a Poem, entitled "The Pleasures of Poverty."

More Saxon Sheep.—We learn that the Hon. Joseph Strong, of South Hadley, has recently received from Saxony, by way of Hamburg, two Saxon bucks and three ewes, in fine order. The spirit of enterprize and improvement manifested by Mr. Strong and by Messrs. Bates and Shepherd of this town, in introducing into the United States the fine wooled sheep of Saxony, is highly creditable to them, and will, we are persuaded, be productive of beneficial consequences to our country.
Northampton Gazette.

A machine for making Pins is in operation at New York, belonging to Mr. H. Whittemore, which makes 30 pins in a minute.—In the British mode only 14 are made in the same time.

A new carriage has been invented in Philadelphia, which is propelled by the weight of persons who ride in it.

Notice is given in the Albany Daily Advertiser, for the benefit of all sturdy rogues and beggars, that a Stepping Mill is about to be erected in that city.

Internal Improvement.—The example set by the populous and powerful state of New York, has given an impulse to internal improvement throughout the United States, which deserves every encouragement. In Pennsylvania, Maryland, Virginia, North and South Carolina, and in Ohio, canals are in contemplation, and in a course of execution, which cannot fail to increase the wealth of those states, and add greatly to the general prosperity of the Union. The present moment is extremely favorable to these improvements. The monied capital withdrawn from trade, and which, to a vast amount, must be in the hands of individuals, may be advantageously vested in these undertakings; and, from recent examples in this respect, we are gratified to find there is no lack of means to effect the objects in view. The investment of funds in such a way will be profitable both to the present generation and to posterity.—*Washington Gazette.*

Important Discovery.—Some fine specimens of rich lead ore have lately been found near the surface of the earth, in a field belonging to Mr. Samuel Chase, in White Creek, in Washington county, Pa. More than a dozen hands were employed, for several days, in further investigating the extent of the mine.

The plant, vulgarly called *Pokeweed*, is recommended as a specific and sovereign remedy for the *cancer*. The recommendations appear to rest on a solitary experiment made by a person of color, who by accident threw the leaves of this plant over a cancer to keep off the flies. Finding unexpected relief, he repeated the operation, and was entirely cured.

The brine in which cucumbers are preserved, is discovered to be fatally poison to cattle and hogs. A gentleman in a neighboring town has lost several cattle and hogs in consequence of their drinking it.—*Rutland Her.*

The fly has ceased its ravages in some parts of Virginia, and the prospect respecting wheat is brightening. A good rye harvest has commenced—and corn looks well.

Dear Fruit.—In England, in April, a person gave two guineas for two cherries raised in a hot house.

The New York Canal Commissioners have at length decided that the Great Western Canal shall terminate at Black Rock, instead of Buffalo, as was at first contemplated.

Wm. M'Ree, late of the corps of Engineers; Lieut. Col. R. Lee, Superintendant of the National Armory at Springfield, Mass. and Capt. G. Talcott, of the Ordnance Department, have been appointed to explore the Western Country, under the act passed at the last session of Congress, for the establishment of a National Armory upon the Western waters.

☞ *Mistake corrected.*—In our paper No. 47, p. 371, is a "receipt for destroying caterpillars," &c. in which it is directed to "take equal parts of *turpentine* and train oil," &c. as an application to destroy those insects. It *should have been* "take equal parts of *spirits of turpentine*," &c. This mistake is important, for the receipt, as it now stands, would probably prove ineffectual. The reader will please to correct it, by inserting *spirits of*, after the words "parts of," in the first line of the receipt.

DIED, on the 27th June, at his seat near Milford, His Excellency JOSEPH HASLET, Governor of the State of Delaware.

In Amherst, on Monday evening last, very suddenly, Rev. ZEPHANIAH SWIFT MOORE, D. D. President of the Amherst Collegiate Institution. His disease was an attack of the bilious cholic.

PRICES OF COUNTRY PRODUCE, &c.

[Revised and corrected every Friday.]

		FROM D. C.	TO D. C.
ASHES, pot, 1st qual.	ton.	143 00	145 00
pearl do.		153 00	155 00
BEANS, white,	bush	1 00	1 10
BEEF, mess, 200 cwt.	bbl.	9 50	9 75
cargo, No 1,		8 50	8 75
" No 2,		7 00	7 25
BUTTER, inspect. 1st qual.	lb.	11	12
" 2d qual.		9	10
small kegs, family,		13	14
CHEESE, new milk		7	8
FLAX		8	9
FLAX SEED	bush	85	90
FLOUR, Baltimore, superfine,	bbl.	7 75	7 87
Genessee		7 62	7 87
Rye, best		4 50	4 75
GRAIN, Rye	bush	72	75
Corn		58	60
Barley		68	70
Oats		40	42
HOGS' LARD, 1st sort	lb.	11	12
HOPS, No 1,		8	12
LIME,	cask	1 25	1 37
OIL, Linseed, American	gal.	65	00
PLAISTER PARIS	ton.	3 00	3 25
PORK, Navy Mess	bbl.	12 00	12 50
Bone Middlings		14 00	14 50
Cargo, No 1,		12 00	12 50
Cargo, No 2,		11 00	11 50
SEEDS, Herd's Grass	bush	2 00	2 25
Clover	lb.	8	9
WOOL, Merino, full blood, washed		55	62
do do unwashed		46	50
do 3-4 washed		50	55
do 1-2 do		45	47
Native do		38	40
Pulled, Lamb's, 1st sort		55	60
do Spinning, 1st sort		50	55

PROVISION MARKET.

BEEF, best pieces	lb.	8	10
PORK, fresh		7	8
VEAL,		6	8
LAMB, per quarter		37	50
POULTRY,		10	12
BUTTER, keg & tub		13	14
lump, best		15	16
EGGS,	doz.	12	14
MEAL, Rye,	bush	75	80
Indian,		75	
POTATOES,		40	45
CIDER, liquor,	bbl.	1 50	2 25
HAY, best,	ton.	18 00	22 00

THE SPLENDORS OF THE SETTING SUN.

BY T. G. FESSENDEN.

Sol slowly sinking down the steep of heaven,
With softened splendor greets the musing eye;
Resigns his throne to "sober suited even,"
But decorates, while he deserts, the sky.

His noon day beams, insufferably bright,
Are now succeeded by a milder blaze,
And every slanting filament of light
Heav'n's kind and cheering effluence conveys.

Now let me wend my solitary way
Where groves and lawns present alternate charms;
Gaze on the glories of the waning day,
Till night shall fold me in her dusky arms:

Mark how the clouds now seem like molten gold,
And now like snow banks heap'd on banks of snow;
Now dash'd with azure softer hues unfold,
Now shift and kindle to a furnace-glow!

Compared with these, what is the pride of art?
Your petty palaces, and pigmy spires—
The paltry pageants of your noisy mart—
And all the city-connoisseur admires?

Should the whole race of man unite as one,
To celebrate some glorious festal day,
The simple splendor of the setting sun,
Would far transcend their most superb display.

From the London Museum for April.

MR. PERKINS' STEAM ENGINE.

We have no recollection of any invention connected with the useful arts having produced so great a sensation among scientific men, as the improved steam-engine of Mr. Perkins. It is not surprising that manufacturers, whose interests are entirely involved in the construction of engines on the lower-pressure system, should look with some degree of scepticism and jealousy towards the bold invention of Mr. P.; nor that they should raise doubts in the public mind as to the imminent danger to be apprehended from the use of high-pressure engines generally. But in the present case, many scientific men, totally unconnected with manufactures, seemed disinclined, in the first instance, to admit the possibility of the improvements suggested by Mr. P. being reduced to practice.

Notwithstanding the superior economy and increase of power in high-pressure engines of the usual construction has been gradually introducing them in various manufactories, where the proprietors take the precaution of employing *only* men of intelligence to superintend their concerns; the enormous increase of power ascribed to the engine of this gentleman's invention seemed perfectly *incredible*, until he produced conviction by the actual test of experiment. As we have had an opportunity of witnessing the operation of this beautiful invention, we shall give our readers as good an outline of its construction as we are enabled without the aid of a plate for reference.

Mr. P.'s invention is founded on a most invaluable discovery—that water is capable of enduring an elevation of temperature even to a red heat, or perhaps an indefinite extent, by being subjected to a very high degree of pressure; which pressure, while it permits the expansion of the molecules of the water *as a fluid*, prevents their further expansion, or the liquid assuming the *gaseous* form of steam.

The profound science and resolution, requisite to manage experiments of this dangerous character, can only be appreciated by those who have devoted some attention to chemical subjects. This gentleman, however, has united to this discovery respecting the laws of expansion, the most simple and beautiful application of mechanical science, in the construction of his new steam-engine, which is briefly as follows:—Instead of the boiler of the ordinary engines, Mr. P. substitutes a cylinder, which he terms the *generator*. This cylinder is made of gun-metal, (the most tenacious and least liable to oxydation) of about three inches in thickness, closed at both ends, with the exception of a valve in the top, opening outwards; which valve is loaded with weights equal to the state of the pressure from the expansion of the heated water within. The cylinder is placed vertically in a cylindrical furnace; consequently it becomes surrounded on all sides with the fire, and soon acquires a temperature of 400 or 450 degrees Fahrenheit. The production of steam is effected by an injecting-pump throwing in water at one part of the generator, which displaces through the valve an equal volume of hot water from the generator. The water, at 420 degrees, passing into the induction or steam-pipe, instantly expands into steam, communicates with the working cylinder, and gives motion to its piston, which is placed in a horizontal direction, for the more convenient application of its powers to machinery. The reciprocal action of the piston opens and shuts the apertures of the *induction* and *eduction* pipes, by means of rotary valves, as usual in some other engines. But the operation of generating and condensing the steam is effected so instantaneously by this engine, that the piston performs about 200 strokes in a minute, when the engine is at full work. Indeed, considering the small extent of surface, the power of this engine is almost incredible, the generator containing only about eight gallons of water, and the working cylinder not exceeding two inches in diameter, with a stroke of the piston about 12 inches in length. The piston rod gives motion to a crank and fly-wheel similar to other engines.

A most decided improvement is also made by Mr. P. in condensing the steam under a very great degree of pressure, and at a temperature of about 320 degrees, and in this state returning into the reservoir for the successive supply of the generator. In consequence of this economical arrangement, the space occupied by the engine with all its appurtenances, does not exceed an area of six feet by eight. The present mode is calculated as equal to a 10-horse power; and Mr. P. considers the whole of the apparatus of sufficient size for a 30-horse engine, with the exception of the working cylinder and piston.—The consumption of coal for this engine is within two bushels per day, when at full work.

All risk of accident is effectually provided against, by the following ingenious contrivance. It should be remembered, that owing to the small extent of surface exposed to the expansive force of the steam, and the latter being generated *only* in sufficient quantity for each succeeding stroke of the piston, there is much less liability to accident from this engine than in most other high-pressure engines. To prevent, however, the possibility of such an event, the induction pipe, in which the steam is produced, is calculated to withstand an internal force of 4000 pounds to the square inch, and it is also provided with a thin copper tube, which is calculated to burst at a pressure of 1000 pounds; while the pressure under which Mr. P. works the engine, does not exceed 500 pounds on the square inch.

In order to demonstrate the perfect safety of the operation of this engine, notwithstanding this immense internal pressure, Mr. P. in his polite efforts to satisfy the scruples and fears of his numerous scientific friends, has, on several occasions, urged the power of the steam till it burst open the sides of the copper tube without occasioning the smallest risk, either to the spectator, or to any other part of the apparatus. This mode of allowing the escape of the steam by rending open the sides of the ball, (which is made of a determinate strength,) is probably superior in the certainty of its operation to any modification of safety valves.

It is also a very remarkable fact that the steam which escapes in this case is not by any means of that elevated temperature which might have been expected from its prodigious expansive force. This fact seems to involve some points connected with the doctrine of latent heat, or the conversion of fluid into gaseous matter, and *vice versa*, with which we are, at present, but very imperfectly acquainted. We understand Mr. P. is further engaged on some very important enquiries on this most intricate branch of natural philosophy.

The improvements of Mr. P. in the steam engine, we cannot help considering as one of the greatest triumphs of art, even in this highly inventive age. It will, in all probability, effect a greater revolution in operative manufactures, than even the first introduction of the steam-engine by Bolton and Watt.

We have not heard any comparative estimate of the price of Mr. P.'s engines, but we apprehend their original cost will be very considerably lower than that of others; while they can be worked with 1-10th part of the fuel, and occupy only a fifth part of the space required for those of the low pressure construction. The latter point is one of the highest importance, in situations where manufacturers are limited for room, as in the metropolis and other great towns.

The very superior economy of these engines over all others, not only in the consumption of fuel and water, but in the weight of materials, must also render them peculiarly adapted for loco-motive engines; and we entertain little doubt that steam carriages will, ere another 20 years have elapsed, become as generally adopted among us as steam vessels are at the present. And when we take into consideration the immense saving in the consumption and tonnage of coals, we are of opinion that Mr. P.'s invention will infinitely extend the use of the steam-engine in navigation.

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